

IN THE CLAIMS:

Please cancel Claims 41, 42, 44, 46-48, 53, 54, 56, 59, 65, 74, and 75, and amend Claims 45, 51, 52, 55, 57, 64, 66, 67, 70, and 71, as follows.

1-37. (Canceled)

38. (Original) An image-forming apparatus comprising an apparatus for determining the type of sheet, and an image-forming section for forming an image under conditions corresponding to the identified sheet material, wherein

the apparatus for determining the type of sheet comprises

an impact applying unit for applying an impact against a sheet material,

a detection unit for outputting a signal in response to the impact,

a pulse-generating means for generating a pulse in response to a signal outputted from the detection unit at or above a prescribed threshold level, and

a threshold-setting means for setting the threshold in correspondence with intensity of the signal.

39. (Original) The image-forming apparatus according to claim 38, wherein the threshold-setting means computes the threshold on start or reset of the image-forming apparatus.

40. (Original) The image-forming apparatus according to claim 38, wherein the threshold-setting means computes the threshold when a change of the sheet material is expected.

41-42. (Canceled)

43. (Original) A method of identifying a type of a sheet material comprising the steps:

applying an impact force to the sheet material;

detecting attenuation of the applied impact force by the sheet material;

outputting a signal in correspondence with the detected force;

generating a pulse when the signal is at or above a prescribed threshold;

setting the prescribed threshold; and

identifying the type of the sheet material based on the output of the pulse generated according to the threshold set above,

wherein the threshold is set according to the output state of the signal.

44. (Canceled)

45. (Currently Amended) An information output apparatus used in an image forming apparatus, comprising:

an impact applying unit applying an impact to a target from the outside thereof;

a detection unit outputting information by the impact,

~~The information output apparatus according to claim 44,~~ wherein said target is a liquid container, and said impact is an external force other than vibration.

46-48. (Canceled)

49. (Previously Presented) A signal output apparatus comprising:  
an impact applying unit for applying an impact to a sheet;  
a substrate for supporting the sheet;  
an impact receiving unit for receiving the impact through the sheet; and  
a signal output unit for outputting a signal according to a mechanical  
property of the sheet, the signal output unit being provided on at least one of the impact  
applying unit side and the impact receiving unit side,

wherein the impact receiving unit is provided in a recess of the substrate,  
and, the level of the surface of the impact receiving unit is lower than the level of the  
surface of the substrate.

50. (Previously Presented) The signal output apparatus according to  
claim 49, wherein the level of the surface of the impact receiving unit is designed so as to  
make the impact receiving unit and the sheet not come in contact with each other at a  
position opposite to the impact applying unit before an impact is applied to the sheet and  
come into contact with each other when the impact is applied to the sheet.

51. (Currently Amended) A signal output apparatus comprising:  
an impact applying unit for applying an impact to a sheet;  
an impact receiving unit for receiving the impact through the sheet; and

a signal output unit for outputting a signal according to a mechanical property of the sheet, the signal output unit being provided on at least one of the impact applying unit side and the impact receiving unit side,

wherein the impact applied to the sheet by the impact applying unit causes the bending of the sheet, whereby the sheet and the impact receiving unit are made to come into contact with each other, to output the signal from the signal output unit, and  
~~The signal output apparatus according to claim 46,~~ wherein the impact applying unit applies a plurality of the impacts to the sheet.

52. (Currently Amended) A signal output apparatus comprising:  
an impact applying unit for applying an impact to a sheet;  
an impact receiving unit for receiving the impact through the sheet; and  
a signal output unit for outputting a signal according to a mechanical property of the sheet, the signal output unit being provided on at least one of the impact applying unit side and the impact receiving unit side,  
wherein the impact applied to the sheet by the impact applying unit causes the bending of the sheet, whereby the sheet and the impact receiving unit are made to come into contact with each other, to output the signal from the signal output unit, and  
~~The signal output apparatus according to claim 46,~~ wherein the impact applying unit applies plural kinds of ~~the impact~~ impacts to the sheet.

53-54. (Canceled)

55. (Currently Amended) A signal output apparatus comprising:  
an impact applying unit for applying an impact to a sheet;  
an impact receiving unit for receiving the impact through the sheet; and  
a signal output unit for outputting a signal according to a mechanical  
property of the sheet, the signal output unit being provided on at least one of the impact  
applying unit side and the impact receiving unit side,  
  
wherein the impact applied to the sheet by the impact applying unit causes  
the bending of the sheet, whereby the sheet and the impact receiving unit are made to come  
into contact with each other, to output the signal from the signal output unit, and  
~~The signal output apparatus according to claim 46;~~ wherein the impact is applied at the  
time when the sheet is moving.

56. (Canceled)

57. (Currently Amended) A method for determining a sheet type,  
comprising the step of comparing an output signal from a signal output unit of a signal  
output apparatus ~~according to claim 46;~~ with sheet information previously stored to  
determine the type of a sheet to which an impact was applied, wherein the signal output  
apparatus comprises:

an impact applying unit for applying an impact to a sheet;  
an impact receiving unit for receiving the impact through the sheet; and

a signal output unit for outputting a signal according to a mechanical property of the sheet, the signal output unit being provided on at least one of the impact applying unit side and the impact receiving unit side,

wherein the impact applied to the sheet by the impact applying unit causes the bending of the sheet, whereby the sheet and the impact receiving unit are made to come into contact with each other, to output the signal from the signal output unit.

58. (Previously Presented) The method for determining the type of sheet according to claim 57, wherein the type of a sheet to be determined is the kind of material of the sheet.

59. (Canceled)

60. (Previously Presented) The method for determining the sheet type according to claim 58, wherein the kind of material of the sheet is determined using a peak value of the output signal from the signal output unit.

61. (Previously Presented) The method for determining the sheet type according to claim 58, wherein the kind of material of the sheet is determined using a number of peaks of the output signal from the signal output unit or an interval of time between the peaks.

62. (Previously Presented) The method for determining the sheet type according to claim 58, wherein the kind of material of the sheet is determined using the n-th peak value and the (n+••)-th peak value, where •• represents a natural number, of the output signal from the signal output unit.

63. (Previously Presented) The method for determining the sheet type according to claim 58, wherein the kind of material of the sheet is determined using a recoil period of the impact applying unit.

64. (Currently Amended) An image forming apparatus comprising: ~~a signal output apparatus according to claim 46;~~

a signal output apparatus comprising:

an impact applying unit for applying an impact to a sheet;

an impact receiving unit for receiving the impact through the sheet;

and

a signal output unit for outputting a signal according to a mechanical property of the sheet, the signal output unit being provided on at least one of the impact applying unit side and the impact receiving unit side; and

a memory unit in which information on sheets is stored, and performing

wherein the impact applied to the sheet by the impact applying unit causes the bending of the sheet, whereby the sheet and the impact receiving unit are made to come into contact with each other, to output the signal from the signal output unit, and

wherein the image forming apparatus performs a function of determining the kind of material of the sheet using an output signal from a the signal output unit of the signal output apparatus and information in the memory unit.

65. (Canceled)

66. (Currently Amended) An image forming apparatus, which comprises:  
a signal output apparatus comprising: ~~a signal output apparatus comprising:~~  
an impact applying unit for applying an impact to a sheet;  
an impact receiving unit for receiving the impact through the sheet;  
and  
a signal output unit for outputting a signal according to a mechanical property of the sheet, the signal output unit being provided on at least one of the impact applying unit side and the impact receiving unit side,  
wherein the impact applied to the sheet by the impact applying unit causes the bending of the sheet, whereby the sheet and the impact receiving unit are made to come into contact with each other, to output the signal from the signal output unit, and  
a conveying means which conveys a sheet; and  
an image forming means for forming an image on the sheet. ~~The image forming apparatus according to claim 65;~~

wherein the conveying means is controlled by using an output signal from the signal output unit and a memory unit in which information on sheets is stored.



67. (Currently Amended) An image forming apparatus, which comprises:

a signal output apparatus comprising:

a signal output apparatus comprising:

an impact applying unit for applying an impact to a sheet;

an impact receiving unit for receiving the impact through the sheet;

and

a signal output unit for outputting a signal according to a mechanical property of the sheet, the signal output unit being provided on at least one of the impact applying unit side and the impact receiving unit side,

wherein the impact applied to the sheet by the impact applying unit causes the bending of the sheet, whereby the sheet and the impact receiving unit are made to come into contact with each other, to output the signal from the signal output unit, and according to claim 46;

a conveying means which conveys a sheet; and

an image forming means for forming an image on the sheet, The image forming apparatus according to claim 65;

wherein the image forming means is controlled by using an output signal from a the signal output unit of the signal output apparatus and a memory unit in which information on sheets is stored.

68. (Previously Presented) The image forming apparatus according to claim 67, further comprising fixing means for fixing on the sheet a toner image formed by

the image forming means, wherein the fixing means is controlled by using an output signal from the signal output unit.

69. (Previously Presented) The image forming apparatus according to claim 68, wherein the controlling of the fixing means includes controlling the amount of ink to be discharged toward the sheet.

70. (Currently Amended) An image forming apparatus, which comprises a signal output apparatus comprising:

an impact applying unit for applying an impact to a sheet;

an impact receiving unit for receiving the impact through the sheet; and

The image forming apparatus according to claim 65, which comprises a plurality of the signal output units for outputting a signal according to a mechanical property of the sheet, the signal output units being provided on at least one of the impact applying unit side and the impact receiving unit side.

wherein the impact applied to the sheet by the impact applying unit causes the bending of the sheet, whereby the sheet and the impact receiving unit are made to come into contact with each other, to output the signal from a signal output unit of the plurality of signal output units;

a conveying means which conveys a sheet and an image forming means for forming an image on the sheet.

71. (Currently Amended) A sheet conveying apparatus comprising: a ~~signal output apparatus according to claim 46,~~

a signal output apparatus comprising:

an impact applying unit for applying an impact to a sheet;

an impact receiving unit for receiving the impact through the sheet;

and

a signal output unit for outputting a signal according to a mechanical property of the sheet, the signal output unit being provided on at least one of the impact applying unit side and the impact receiving unit side,

wherein the impact applied to the sheet by the impact applying unit causes the bending of the sheet, whereby the sheet and the impact receiving unit are made to come into contact with each other, to output the signal from the signal output unit; and

conveying means for conveying a sheet, wherein a conveying condition in the conveying means is determined by using a signal from a the signal output unit in the signal output apparatus.

72. (Previously Presented) A signal output method comprising the steps of:

making a sheet exist between an impact applying unit and an impact receiving unit,

applying an impact to the sheet to cause the bending of the sheet, whereby the sheet and the impact receiving unit are made to come in contact with each other at a

position opposite to the impact applying unit, to output a signal according to a mechanical property of the sheet.

73. (Previously Presented) A signal output method comprising the step of applying an impact to a sheet with an impact applying unit to bend the sheet toward a recess provided at a position opposite to the impact applying unit, whereby the sheet and an impact receiving unit are made to come into contact with each other at the position, to output a signal according to a mechanical property of the sheet.

74-75. (Canceled)